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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LU, FRANK WEI MIN

ART UNIT	PAPER NUMBER
1634	22

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/204,865	Applicant(s) CHEN ET AL.	
	Examiner Frank Lu	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-15,21-36,40,41,44,50-52,58-60 and 62-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,23,60 and 64* is/are allowed.

6)☒ Claim(s) *2-11,13-15,21,22,24-36,40,41,44,50-52,58,59,62,63 and 65-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Detailed Action* .

DETAILED ACTION

Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 1, 2002 has been entered as Paper No. 21. The claims pending in this application are claims 1-11, 13-15, 21-36, 40, 41, 44, 50-52, 58-60, and 62-67 will be examined. Rejection and/or objection not reiterated from the previous office action are hereby withdrawn.

Claim Rejections - 35 U.S.C. § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10, 24, 25, 34, 36, and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "high density or high molecular weight" in claims 10, 34, and 67 is a relative term which renders the claim indefinite. The term "high density or high molecular weight" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite

degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Response to Arguments

In page 5, last paragraph bridging to page 6, first paragraph of applicant's remarks, applicant argued that: "[C]laims 10, 34, and 67 reasonably apprise those skilled in the art of their scope." since "[T]erms high density polyethylene and ultra-high molecular weight polyethylene are well known to those of the skill in the art as evidenced by Exhibit B of the Amendment Under 37 CFR § 1,112 filed by the applicants on December 3, 1998.".

This argument has been fully considered but it is not persuasive toward the withdrawal of the rejection. First, although applicant provided the references to support his position, these references were not found in the specification and were not incorporated by references. Second, [T]erms high density polyethylene and ultra-high molecular weight polyethylene" are not known to those of the skill in the art since, since, for those of the skill in the art, different groups of people have different standards. Exhibit B only provides examples for the high density polyethylene and ultra-high molecular weight polyethylene. However, the examples are not definitions.

5. The term "high stringency or low stringency or moderate stringency" in claims 24, 25 and 36 is a relative term which renders the claim indefinite. The term "high stringency or low stringency or moderate stringency" is not defined by the claims, the specification does not

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Response to Arguments

In page 6, fourth and fifth paragraphs of applicant's remarks, applicant argued that "[C]laims 24, 25, and 36 reasonably apprise those skilled in the art of their scope." since "the term 'high stringency', 'low stringency' and ' moderate stringency' are well known to those skill in the art as evidence by Exhibit C of the Amendment Under 37 CFR § 1,112 filed by the applicants on December 3, 1998." and the specification (pages 32-34) describes and defines the terms "high stringency", "low stringency" and "moderate stringency".

These arguments have been fully considered but they are not persuasive toward the withdrawal of the rejection. The examiner noted that the specification (pages 32-34) provides examples for the conditions of "high stringency", "low stringency" and "moderate stringency". However, the examples in the specification are not definitions. Since high, moderate and low are relative terms, for those of the skill in the art, different groups of people have different standards. While the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. *In re Van Guens*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Claims 9 and 33 recite the limitation "glass" in the claim. There is insufficient antecedent basis for this limitation in the claims because amended claims 1 and 60 do not have a three-dimensional porous substrate made by glass.

Claim Rejections - 35 U.S.C. § 102/103

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CAR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103 (c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 2-5, 8, 9, 14, 15, 21, 22, 24, 25, 27-29, 32, 33, 36, 40, 41, 59, and 63 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Beattie (US Patent No. 5,843,767, filed on April 10, 1996).

Beattie teaches microfabricated, flow through porous apparatus for discrete detection of binding reactions.

Regarding claims 59 and 63, although Beattie made a flow-through device in a method that was different from claim 59 (prior to immobilization of the capture polynucleotide, a three-dimensional porous substrate was not activated by plasma activation), there is no structural difference between the flow-through device made by Beattie and the flow-through device as recited in claim 59. Note that, if this claims is a product-by-process claim, it is well established that even though product-by process claims are limited by and defined by the process, the determination of the patentability of the product is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."*In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claims 2-5, 8, 9, 14, 15, 21, 22, 24, 25, 27-29, 32, 33, 36, 40, and 41, Beattie teaches to tether DNA targets or probes for hybridization using nanochannel glass (NCG) wafers. NCG materials were unique glass structures containing a regular geometric array of parallel holes or channels as small as 33 nm in diameter or as large as several micrometers in diameter as recited in claims 3 and 27. These nanochannel glass structures could possess packing densities in excess of 3×10^{10} channels per square centimeter, fabricated in various array configurations (column 9, eight paragraph). A variety of materials could be immobilized or fixed to the glass surfaces within the channels (housing as recited in claims 21 and 22) of the NCG array, to yield a

high surface area to volume ratio. Once the fabrication process was complete, the NCG material was wafered perpendicular to the direction of the channels with a diamond saw and then polished to produce 0.1-1.0 mm sections of material (0.1-1 mm thick as recited in claim 2) (column 10, second paragraph). 5' or 3' terminal residue of said capture polynucleotide could be attached to the porous substrate via a linker as recited in claims 5, 8, 9, 14, 15, 29, 32, and 33 (see column 16, second and third paragraphs). In hybridization reaction as recited in claims 36, 40, and 41, the target DNA sample was flowed into the porous regions of the chip and hybridized to the nanoporous wafers bearing oligonucleotide probes (including washing steps). Radioactive tags (^{32}P and ^{33}P, incorporated by random priming and PCR reaction) were also used in these experiments (see columns 17 and 18). Note that: (1) although Beattie did not directly teach that the three-dimensional porous substrate had about 2×10^{-19} to 2×10^{-15} nmol/nm^2 of a capture polynucleotide (about 1.2×10^{10} to 1.2×10^{14} probe per square centimeter), they taught that, for DNA binding capacity, the amount of attaching labeled oligonucleotide to flat glass and gold surface were up to 10^8 probe in a 50 μm and 50 μm area ($4x10^{12}$ probes per square centimeter as recited in claims 4 and 28) (see column 17, third paragraph); and (2)Beattie did not describe the limitation in claims 24, 25, and 36, the rejections were be made in view of the ambiguity of claims 24, 25, and 36 since high, moderate and low were relative terms, for those of the skill in the art, different groups of people had different standards (see above rejections).

10. Claims 3-10, 14, 15, 21, 22, 24, 25, 27-34, 36, 40, 41, 58, 59, 62, and 63 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kamb *et al.,* (US Patent No.6,060,240, filed on December 13, 1996).

Regarding claims 3-10, 14, 15, 21, 22, 24, 25, 27-34, 36, 40, 41, 58, and 62, Kamb *et al.,* teach the generation of beads comprising capture oligonucleotides or nucleic acids. Beads included commercially available nucleoside-derivatized CPG, polystyrene beads, magnetic beads, and polystyrene beads grafted with polyethylene glycol (column 10, third paragraph). Note that the beads used in this prior art was spherical in shape with a diameter ranging from 70 to 400 μm (see column 21), thus we could reasonablely approximate pores between beads in a column format to be the size of a bead equal to the diameter of the bead even through no exact porous size as recited in claims 3 and 27 was available. Capture oligonucleotides could be attached to a bead for use (see column 11, fourth paragraph). Various links might be employed: including hydrophilic links, such as polyethyleneoxy, saccharide, polyol, esters, amides, saturated or unsaturated alkyl, aryl, combinations thereof, and the like. Functionalities presented on the bead may include hydroxy, carboxy, iminohalide, amino, thio, active halogen (Cl or Br), carbonyl, silyl, tosyl, mesylates, brosylates, triflates or the like as recited in claims 5, 7, 8, 29, and 31-33 (column 11, fifth and sixth paragraphs). The capture oligonucleotides could also be linked to the beads via a phosphodiester linkage to the phosphate of the 3'-terminal nucleotide via nucleophilic attack by a hydroxyl (typically an alcohol) on the bead surface; or via a phosphoramidate linkage between the 3'-terminal nucleotide and a primary amine conjugated to the bead surface as recited in claims 6, 14, 15, and 30 (column 12, fourth paragraph). As shown

in Figure 7, 100 synthesis columns would produce one million different 24-mer oligonucleotides. In a first series of couplings, one hundred (100) columns are used to synthesize one hundred (100) different 8-mers that remain attached to the beads in each column (considered as a housing as recited in claims 21 and 22) (see column 15, second paragraph). These columns were used in methods recited in claims 36, 40, and 41 which included loading labeled cDNA into the columns, hybridizing the cDNA with oligonucleotides immobilized on the beads, washing cDNA-oligonucleotide hybridized complex, and detecting the hybridization complex (see Figure 11 and Example 12 in column 36). Note that: (1) the beads inside the column could be considered to form a three-dimensional porous macroscopic network as recited in claim 58; (2) although Kamb *et al.,* did not directly show that the three-dimensional porous substrate had about 2×10^{-19} to 2×10^{-15} nmol/nm^2 of a capture polynucleotide (about 1.2×10^{10} to 1.2×10^{14} probe per square centimeter), they taught that the number of capture oligonucleotides that could be attached onto the surface of a 10 micron radius bead (their surface was roughly 1200 square microns) were about 3×10^9 (~2.5×10^{14} probe per square centimeter) as recited in claims 4 and 28 (see column 20); and (3) although Kamb *et al.,* did not describe the limitation in claims 10, 24, 25, 34, and 36, the rejections were be made in view of the ambiguity of claims 10, 24, 25, 34, and 36 since high, moderate and low were relative terms, for those of the skill in the art, different groups of people had different standards (see above rejections).

Regrading claims 59 and 63, although Kamb *al.,* made a flow-through device in a method that was different from claim 59 (prior to immobilization of the capture polynucleotide, a three-dimensional porous substrate was not activated by plasma activation), there is no structural

difference between the flow-through device made by Kamb *al.,* and the flow-through device as recited in claim 59. Note that, if this claims is a product-by-process claim, it is well established that even though product-by process claims are limited by and defined by the process, the determination of the patentability of the product is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."*In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985).

11. Claims 44, 50-52, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beattie (April 10, 1996) as applied to claims 2-5, 8, 9, 14, 15, 21, 22, 24, 25, 27-29, 32-34, 36, 40, 41, 59, and 63 above, and further in view of Dean *et al.,* (US Patent No. 5,843,662, filed on May 13, 1996).

The teachings of Beattie have been summarized previously, *supra.* A capture polynucleotide could be considered as reactive groups as recited in claim 65. Since Beattie taught that the amount of attaching labeled oligonucleotide to flat glass and gold surface were up to 10^8 probe in a 50 μm and 50 μm area ($4x10^{12}$ probes per square centimeter) (see above), which met the limitation of 6×10^{-17} to 9×10^{-15} nmol/nm^2 of a capture polynucleotide (about 3.6×10^{12} to 5.4×10^{14} probe per square centimeter) as recited in claim 65.

Besides a kit, Beattie teaches all limitations of claims 44, 50-52, and 65.

difference between the flow-through device made by Kamb *al.*, and the flow-through device as recited in claim 59. Note that, if this claims is a product-by-process claim, it is well established that even though product-by process claims are limited by and defined by the process, the determination of the patentability of the product is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."*In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985).

11. Claims 44, 50-52, 65, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beattie (April 10, 1996) as applied to claims 2-5, 8, 9, 14, 15, 21, 22, 24, 25, 27-29, 32-34, 36, 40, 41, 59, and 63 above, and further in view of Dean *et al.*, (US Patent No. 5,843,662, filed on May 13, 1996).

The teachings of Beattie have been summarized previously, *supra.* A capture polynucleotide could be considered as reactive groups as recited in claim 65. Since Beattie taught that the amount of attaching labeled oligonucleotide to flat glass and gold surface were up to 10^8 probe in a 50 μm and 50 μm area ($4x10^{12}$ probes per square centimeter) (see above), which met the limitation of 6×10^{-17} to 9×10^{-15} nmol/nm^2 of a capture polynucleotide (about 3.6×10^{12} to 5.4×10^{14} probe per square centimeter) as recited in claim 65.

Besides a kit, Beattie teaches all limitations of claims 44, 50-52, 65, and 66.

Dean *et al.*, did teach a kit for determining the concentration of nucleic acid (see abstract and columns 12-14).

Therefore, in the absence of an unexpected result, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have organized the method and components taught by Beattie (a three-dimensional porous substrate, a capture polynucleotide, and means for generating a capture polynucleotide) into kits because the kit format was utilized not only assemble a variety of different reagents together but ensured the quality and compatibility of the reagents. Dean *et al.*, would have motivated and suggested the assemblage of reagent (s) of biotechnology methods into kits in order to obtain the above discussed advantages, thus resulting in instant kits recited in claims 44, 50-52, 65, and 66. One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to assemble components and the method of Beattie into kits because the kits could provide convenient, efficient, economical ways to practice Beattie ' method.

12. Claims 44, 50-52, and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamb *et al.*,(December 1996) as applied to claims 3-11, 14, 15, 21, 22, 24, 25, 27-34, 36, 40, 41, 44, 58, 59, 62, and 63 above, and further in view of Dean *et al.*, (US Patent No. 5,843,662, filed on May 13, 1996).

The teachings of Kamb *et al.*, have been summarized previously, *supra.* A capture polynucleotide could be considered as reactive groups as recited in claim 65. Since Kamb *et al.*, taught that the number of capture oligonucleotides that could be attached onto the surface of a 10

micron radius bead (their surface was roughly 1200 sequare microns) were about 3×10^{9} (~2.5 $\times10^{14}$ probe per square centimeter), which met the limitation of 6×10^{-17} to 9×10^{-15} nmol/nm^2 of a capture polynucleotide (about 3.6 $\times10^{12}$ to 5.4×10^{14} probe per square centimeter) as recited in claim 65.

Besides a kit, Kamb *et al.,* teach all limitations of claims 44, 50-52, and 65-67.

Dean *et al.*, did teach a kit for determining the concentration of nucleic acid (see abstract and columns 12-14).

Therefore, in the absence of an unexpected result, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to have organized the method and components taught by Kamb *et al.*,(a three-dimensional porous substrate, a capture polynucleotide, and means for generating a capture polynucleotide) into kits because the kit format was utilized not only assemble a variety of different reagents together but ensured the quality and compatibility of the reagents. Dean *et al.*, would have motivated and suggested the assemblage of reagent (s) of biotechnology methods into kits in order to obtain the above discussed advantages, thus resulting in instant kits recited in claims 44, 50-52, and 65-67. One having ordinary skill in the art at the time the invention was made would have been a reasonable expectation of success to assemble components and the method of Kamb *et al.*, into kits because the kits could provide convenient, efficient, economical ways to practice the method of Kamb *et al.*.

Response to Arguments

I. In second paragraph of page 9, second paragraph of page 11, and third paragraph of page 12 of applicant's remarks, applicant argued that "[K]amb fails to teach or suggest a flow-through device comprising a three-dimensional porous macroscopic network having immobilized thereon a capture polynucleotide".

This argument has been fully considered but it is not persuasive toward the withdrawal of the rejection because the beads inside the column could be considered to form a three-dimensional porous macroscopic network. Although the specification (page 13, last paragraph bridging to page 14, first paragraph) requests that particles are "sintered together to form a porous three-dimensional macroscopic network", this limitation was not in the claims. While the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. In re Van Guens, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

II. In first paragraph of page 8 and last paragraph of page 11 of applicant's remarks, applicant argued that Beattie did not " teach a flow-through device activated by plasma activation".

This argument has been fully considered but it is not persuasive toward the withdrawal of the rejection because, although Beattie made a flow-through device in a method that was different from claim 59 (prior to immobilization of the capture polynucleotide, a three-dimensional porous substrate was not activated by plasma activation), there is no structural difference between the flow-through device made by Beattie and the flow-through device as recited in claim 59. The patentability of a product does not depend on its method of production.

If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."*In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985).

Conclusion

13. Claims 1, 23, 60, and 64 are allowed over prior art because the prior art in the record do not teach all limitations recited in claims 1, 23, 60, and 64.

14. Claims 11, 13, 26, and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CAR § 1.6(d)). The CM Fax Center number is either (703) 308-4242 or (703)305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Lu, Ph.D., whose telephone number is (703) 305-1270. The examiner can normally be reached on Monday-Friday from 9 A.M. to 5 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (703) 308-1152.

Any inquiry of a general nature or relating to the status of this application should be directed to the patent Analyst of the Art Unit, Ms. Chantae Dessau, whose telephone number is (703) 605-1237.

Frank Lu
July 26, 2002